THE DEPARTMENT OF ENERGY
Office of Public Affairs

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For Immediate Release:
Friday, September 10, 2010

Secretary Chu Awards $9.6 Million for Transformational Energy Research Projects

Six projects to pursue breakthroughs that could fundamentally change the way we use and produce energy

Washington, D.C. – U.S. Secretary of Energy Steven Chu today announced the selection of six transformational energy research and development projects that could revolutionize how the country uses, stores and produces energy. Funded with $9.6 million from the American Recovery and Reinvestment Act, the projects announced today round out the selections made by the Department of Energy's Advanced Research Projects Agency-Energy (ARPA-E). The $9.6 million is being awarded to projects that could improve energy efficiency in buildings by reducing loads on air conditioners; reduce costs associated with generating electricity from solar power; and improve efficiency and power density of electric machines.

"By investing in transformative ideas now, we are laying the foundation for a new clean energy future," said Secretary Chu. "The ARPA-E program is helping to ensure U.S. leadership in science and technology, restore our global competitiveness, and create thousands of jobs."

To date, ARPA-E has selected a total of 121 projects for $363 million in funding, supporting research that can deliver breakthrough changes in how the U.S. generates, stores, and utilizes energy. In total, projects selected and funded through ARPA-E are based in 30 states, with approximately 39% of projects led by universities, 33% by small businesses, 20% by large businesses, 5% by national labs, and 3% by non-profits.

The projects announced today include:

Dais Analytic Corporation (Odessa, FL) – Nanotechnology Membrane-Based Dehumidifier

In warm and humid climates the efficiency of air conditioning decreases significantly in removing the moisture out of the air. This project proposes to dehumidify moist air using a nano-structured solid polymer which is permeable to moisture but not permeable to air. This technology would enable higher efficiencies and significant cost savings in cooling technologies. This project will receive $680,000 in funding.

GE Global Research (Niskayuna, NY) - Transformational Nanostructured Permanent Magnets

In this project, General Electric Global Research (GE) will develop next-generation permanent magnets that include a lower content of critical rare-earth materials. GE will develop bulk nanostructured magnetic materials, resulting in a dramatic increase in performance over state-of-the-art magnets. The impact of these new magnets will be to increase the efficiency and power density of electric machines while reducing dependence on globally critical rare-earth minerals. These magnets will enable further market penetration of hybrid vehicles and wind turbine generators by US manufacturers. This project will receive $2.2 million in funding.

Makani Power, Inc. (Alameda, CA) - Airborne Wind Turbine

An Airborne Wind Turbine (AWT), which is a high performance wing connected to the ground by a tether, will be developed to demonstrate autonomous flight, power generation, and flight modes under a wide range of wind conditions. Due to its enhanced performance at lower wind speeds, the AWT technology has the potential to expand the area suitable for wind power and deliver energy at a significantly lower cost than conventional horizontal-axis wind turbines. This project will receive $3 million in funding.

Sustainable Energy Solutions (Provo, UT) - Cryogenic Carbon Capture

Cryogenic carbon capture, a process by which flue gas from a power plant is cooled so that carbon dioxide changes directly from gas to a solid, will be demonstrated as a new option for capturing carbon dioxide. This process is a radically different method to capture carbon dioxide, and offers the potential for improved efficiency and lower capture costs. This project will receive $750,000 in funding.

Teledyne Scientific & Imaging, LLC (Thousand Oaks, CA) - Optofluidic Solar Concentrators

Currently tracking of solar radiation in concentrated photovoltaic systems is provided by mechanical means with multiple moving parts, which raises reliability concerns. These systems are also bulky. This project will develop an electrowetting-based dynamic liquid prism to track both the daily and seasonal changes of the Sun's orbit for concentrating photovoltaics (CPV) and reduce capital costs through increased operational efficiency by eliminating bulky mechanical tracking. This project will receive $500,000 in funding.

University of California Los Angeles (UCLA) (Los Angeles, CA) - Thermal Energy Storage with Supercritical Fluids

Two-tank molten salt is currently the preferred state-of-the-art thermal energy storage for solar thermal power plants. The UCLA-led team will develop and implement a supercritical fluid based thermal energy storage system which will potentially increase the energy density by over a factor of two compared to the two-tank molten salt system, with a cost less than 70% of the molten salt system. This project will receive $2.4 million in funding.

View full technical descriptions of the projects announced today.

The proposals were reviewed based on scientific and technical merit and the potential to dramatically advance national energy and economic goals. In addition to the projects ARPA-E selected as part of previous funding opportunity announcements, these awards bring the organization's total to 121 high-risk projects funding through the Recovery Act.

To learn more about ARPA-E and previous awards, visit arpa-e.energy.gov.

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